
Source: Alcatel-Lucent
Title: New Work Item proposal: Multi-Band Base Station testing with three or more bands
Document for: Approval
Agenda Item: 14.1.4

3GPP™ Work Item Description

For guidance, see [3GPP Working Procedures](#), article 39; and [3GPP TR 21.900](#).
Comprehensive instructions can be found at <http://www.3gpp.org/Work-Items>

Title: Multi-Band Base Station testing with three or more bands

Acronym:

Unique identifier:

NOTE: If this is a RAN WID including Core and Perf. part, then Title, Acronym and Unique identifier refer to the feature WI. Please tick (X) the applicable box(es) in the table below:

This WID includes a Core part	X
This WID includes a Performance part	X

1 3GPP Work Area

X	Radio Access
	Core Network
	Services

2 Classification of WI and linked work items

2.0 Primary classification

This work item is a ...

	Study Item (go to 2.1)
	Feature (go to 2.2)
X	Building Block (go to 2.3)
	Work Task (go to 2.4)

NOTE: Core, Performance and Testing parts of RAN WIs are usually Building Blocks.
If you are in doubt, please contact MCC.

2.1 Study Item

Related Work Item(s) (if any]		
Unique ID	Title	Nature of relationship

Go to §3.

2.2 Feature

Related Study Item or Feature (if any)		
Unique ID	Title	Nature of relationship

Go to §3.

2.3 Building Block

Parent Feature (or Study Item)		
Unique ID	Title	TS
550015	RF Requirements for Multi-Band and Multi-Standard Radio (MB-MSR) Base Station	37.104, 37.141, 36.104, 36.141, 25.104, 25.141

This work item is ...

	Stage 1 (go to 2.3.1)
	Stage 2 (go to 2.3.2)
X	Stage 3 (go to 2.3.3)
X	Test spec (go to 2.3.4)
	Other (go to 2.3.5)

2.3.1 Stage 1

Source of external requirements (if any)		
Organization	Document	Remarks

Go to §3.

2.3.2 Stage 2

Corresponding stage 1 work item		
Unique ID	Title	TS

Other source of stage 1 information		
TS or CR(s)	Clause	Remarks

If no identified source of stage 1 information, justify:

Go to §3.

2.3.3 Stage 3

Corresponding stage 2 work item (if any)		
Unique ID	Title	TS

Else, corresponding stage 1 work item		
Unique ID	Title	TS

Other justification		
TS or CR(s) or external document	Clause	Remarks
37.104, 36.104, 25.104	All	Core part: RF Requirements for Multi-Band and Multi-Standard Radio (MB-MSR) Base Station

If no identified source of stage 2 information, justify:

Go to §3.

2.3.4 Test spec

Related Work Item(s)		
Unique ID	Title	TS
550215	Perf. part: RF Requirements for Multi-Band and Multi-Standard Radio (MB-MSR) Base Station	37.141, 36.141, 25.141

Go to §3.

2.3.5 Other

Related Work Item(s)			
Unique ID	Title	Nature of relationship	TS / TR

Go to §3.

2.4 Work task

Parent Building Block		
Unique ID	Title	TS

3 Justification

Numerous WI proposals to support the LTE Advanced 3, 4 or 5 Band Carrier Aggregation (3DL/1UL or 4DL/1UL or 5DL/1UL) have been approved in RAN. One of the objectives of these WIs is to specify the band-combination specific RF requirements and testing with three or more bands.

On the other hand, new operating bands continue to be added in the RAN4 specifications, and the transmit/receive frequency ranges of some of those are sufficiently close such that implementation of a common radio supporting simultaneous transmission / reception of three or more bands become a feasible option. Example includes Bands (8+20+28) in Europe. The advantages of this implementation option may include dynamic power sharing between different bands and hence allow operators more flexibility in the network deployment, reduced installation complexity for different bands at the same site, and reduced insertion loss for multi-band antenna sharing since no combiner is needed.

The BS testing for multi-band BS capable of operation in three or more bands has been discussed in RAN4 under TEI for nearly 2 years, namely from RAN4#70Bis to RAN4#76Bis. It was concluded that a work item was needed to conduct this work in a structured manner.

4 Objective

4.1 Objective of SI or Core part WI or Testing part WI

Identify the necessary changes, if any, to the existing multi-band BS requirements for BS capable of operation in three or more bands. In addition, identify additional band combinations beside Band (8+20+28) for feasible implementation of multi-band BS capable of operation in three or more bands.

4.2 Objective of Performance part WI

NOTE: Leave empty if the WI proposal does not contain a RAN performance part.

To specify multi-band BS testing with three or more bands in the RAN4 specifications, using the existing multi-band BS testing with two bands as a base. The work will focus on the following steps:

1. Conclude whether a generic testing approach can be applied to all the identified band combinations or separate testing approaches are necessary.

- ### 4.3 RAN time budget proposal

RAN #70					Q1/2016				RAN
#71									
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf
84	84	93	93	93	91	78	78	78	78
						0.125		0.125	

RAN #71										Q2/2016						RAN			
#72																			
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf	R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf
84bi s	84bi s	93bi s	93bi s	93bi s	91bis	78bis s	78bis	78bi s	78bis	85	85	94	94	94	92	79	79	79	79
						0.12 5		0.12 5								0.12 5		0.12 5	

RAN #72					Q3/2016				RAN
#73									
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf
86	86	95	95	95	93	80	80	80	80
						0.125		0.125	

RAN #73										Q4/2016										RAN			
#74																							
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf	R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf				

86bis	86bis	95bis	95bis	95bis	93bis	80bis	80bis	80bis	80bis	87	87	96	96	96	94	81	81	81	81

RAN #74		Q1/2017								RAN #75	
R1L	R1U	R2L	R2U	R2J	R3	R4RF Core	R4RD Core	R4RF Perf	R4RD Perf		
88	88	97	97	89	95	82	82	82	82		

L: LTE, U: UMTS, J: Joint, RD: RRM/demodulation

NOTE: In case further explanation of the time budget proposal is needed, then please explain this below.

additional comments to the time budget proposal:

5 Service Aspects

6 MMI-Aspects

7 Charging Aspects

8 Security Aspects

9 Impacts

Affects:	UICC apps	M E	A N	C N	Other s
Yes			X		
No	X	X		X	X
Don't know					

10 Expected Output and Time scale

New specifications [If Study Item, one TR is anticipated]						
Spec No.	Title	1st rsp. WG	2nd rsp. WG(s)	Presented for information at plenary#	Approved at plenary #	Comments
TR 37.8xx	E-UTRA, UTRA and GSM/EDGE; Multi-Band Base Station testing with three or more bands	RAN4		RAN#72 (June 16)	RAN#73 (September 16)	Core and Perf.. part

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Comments for each spec.
By default a new specs can only be new for one of both parts.

Affected existing specifications [None in the case of Study Items]				
Spec No.	CR	Subject of the CR	Approved at plenary#	Comments
37.104		E-UTRA, UTRA and GSM/EDGE; Multi-Standard Radio (MSR) Base Station (BS) radio transmission and reception	RAN#73 (September 16)	Core part
36.104		Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception	RAN#73 (September 16)	Core part
25.104		BTS Radio transmission and reception (FDD)	RAN#73 (September 16)	Core part
37.141		E-UTRA, UTRA and GSM/EDGE; BS conformance testing	RAN#73 (September 16)	Perf. part
36.141		Evolved Universal Terrestrial Radio Access (E-UTRA); BS conformance testing	RAN#73 (September 16)	Perf. part
25.141		BS conformance testing (FDD)	RAN#73 (September 16)	Perf. part

NOTE: If this is a RAN WID including Core and Perf. part, then all new Core part specs have to be listed first and then all new Perf. part specs. Indicate "Core part" or "Perf. part" under Comments for each spec.
If an existing spec is affected by both (Core part and Perf. part), then it has to be listed twice with appropriate approval dates.

11 Work item rapporteur(s)

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12 Work item leadership

RAN WG4

NOTE: If this is a RAN WID including Core and Perf. part, then this WG specifies the WG leading the Core part.
RAN WG4 is by default leading the Perf. part.

13 Supporting Individual Members

Supporting IM name
Alcatel-Lucent
Ericsson
Huawei
Nokia Networks
ZTE

